# EDUCATION AND PRACTICE

## PHYSICIAN MEDICAL OVERSIGHT IN EMERGENCY MEDICAL SERVICES: WHERE ARE WE?

Jonathan R. Studnek, MS, NREMT-P, Antonio R. Fernandez, BS, NREMT-P, Gregg S. Margolis, PhD, NREMT-P, Robert E. O'Connor, MD

ABSTRACT

**Objective.** The objective of this study was to quantify the amount of direct contact with medical direction that nationally registered emergency medical services (EMS) professionals receive. The secondary objective was to determine whether differences in medical director contact were associated with work-related characteristics. **Methods.** As part of biennial reregistration paperwork, nationally registered EMS professionals reregistering in 2004 were asked to complete a survey regarding medical direction. There were three survey questions asking participants to indicate, on a five-point scale, how often they interacted with their medical director in specific situations (whether the medical director participated in continuing education, met personally to discuss an EMS issue, and was seen at the scene of an EMS call). Individuals were categorized as having limited contact if they had not observed their medical director in any of the above situations for more than six months. All others where categorized as having recent contact. Demographic characteristics were collected and statistical analysis was performed using chi-square. **Results.** In 2004, 45,173 individuals reregistered, with 28,647 (63%) returning surveys. A complete case analysis was performed, leaving 22,026 (49%) individuals. There were 13,756 (62.5%) individuals who reported having recent medical director contact. A stepwise increase in the percentage of those reporting recent contact was present when comparing the providers' certification levels (emergency medical technician EMT-Basic 47.6%, EMT-Intermediate 62.3%, and EMT-Paramedic 78.5%, $p < 0.001$). The highest percentage of recent contact was reported by those who worked for a hospital-based service, whereas the lowest percentage was reported by volunteer services (hospital-based 78.8%, county/municipal 70.8%, private 67.6%, military 62.4%, government 61.1%, fire-based 57.0%, and volunteer 50.8% $\chi^2 = 712.4$, $p < 0.001$). EMS professionals working in urban areas were more likely to report recent contact than those in rural areas (64.9% vs. 59.2%, $p < 0.001$). **Conclusion.** It has been suggested that EMS professionals benefit from direct contact with a physician medical director. Nearly one-third of participants in this study reported having limited medical director contact. Certification level, service type, and community size were significantly associated with the amount of contact with medical direction.
**Key words:** emergency medical services; emergency medical technicians; medical oversight; medical direction

PREHOSPITAL EMERGENCY CARE 2009;13:53–58

## INTRODUCTION

Medical oversight is an essential component of modern emergency medical systems.[1,2] Initially, the medical supervision of emergency medical services (EMS) personnel was limited to physician oversight of paramedics performing advanced medical interventions.. In 1982, the American College of Emergency Physicians published a position paper, *Medical Control of Prehospital Emergency Medical Services*, which stated that "all aspects of the organization and provision of emergency medial service require the active involvement and participation of physicians."[3] In 1994, the Emergency Medical Technician [EMT]-Basic National Standard Curriculum (NSC) identified medical oversight as a necessary element of EMT-Basic practice. In 1998, the National Association of EMS Physicians' (NAEMSP's) position paper on physician medical oversight concluded that "EMS systems require knowledgeable physician participation and supervision at every level."[4]

Medical oversight is integral to all aspects of EMS; however, little research has been conducted on the quality and quantity of medical oversight in EMS. A review

Presented as an abstract at the National Association of EMS Physicians Annual Meeting, Phoenix, AZ, January 2008.

Received May 12, 2008, from the National Registry of Emergency Medical Technicians (JRS, ARF, GSM), Columbus, Ohio; and the Department of Emergency Medicine, University of Virginia Health System (REO'C), Charlottesville, Virginia. Revision received August 4, 2008; accepted for publication August 6, 2008.

Address correspondence and reprint requests to: Jonathan R. Studnek, MS, National Registry of Emergency Medical Technicians, 6610 Busch Boulevard, Columbus, OH 43229. e-mail: jons@nremt.org

doi: 10.1080/10903120802471964

of the literature suggests that most published work regarding EMS medical oversight focuses on defining why, where, and how medical oversight should be conducted.[5–8] In the only known peer-reviewed study that quantified medical direction, Stone et al.[9] evaluated the status of EMS medical oversight in Maryland. This study assessed how well local medical directors conformed to the level of involvement recommended in the NAEMSP position paper. Face-to-face interviews were conducted with 22 out of 23 medical directors in Maryland to assess their involvement in EMS. The authors found a lower-than-recommended level of involvement from these medical directors. One third of respondents indicated that they were not involved in ensuring paramedic qualifications, and half reported being uninvolved in ensuring competence after retraining. It was concluded that "significant increases in active physician involvement in EMS were necessary to meet the national job description."[9]

This current study assessed the amount of direct contact EMS professionals had with a physician medical director. However, many aspects of a medical director's role do not involve direct contact with frontline personnel. Some active medical directors are involved in many "behind-the-scenes" roles (e.g., protocol development, advocacy, liaison activities, system evaluation, research) that field-level staff may not fully appreciate. Field personnel's direct contact with their medical director is an important component of medical oversight. The visibility of the medical director is an essential element of quality medical leadership and supervision. To paraphrase Busko et al.[10]: how effective can a medical director be if field personnel under the medical director's supervision are unable to identify him or her in a lineup?

The primary objective of this study was to quantify the amount of direct contact that nationally registered EMS professionals have with their medical director. The secondary objective was to determine whether differences in medical director contact were associated with work-related characteristics. It was hypothesized that an EMS professional's certification level, number of years of experience, compensation status, service type, and community size would be associated with medical director contact.

## METHODS

### Study Design

In order to quantify medical director contact, the National Registry of Emergency Medical Technicians (NREMT) attached a questionnaire to their 2004 reregistration packet. Reregistration packets are sent to nationally registered EMS professionals on a biennial basis. Approximately 40,000–50,000 EMS professionals reregister each year.

EMS professionals were asked to complete nine multiple-choice questions regarding medical director contact and work-related characteristics. Participants were not advised of the study goals or objectives. The data set available for analysis was limited to variables included on the questionnaire. Data used in this analysis were de-identified; no personal information was captured; and completion of this survey was voluntary, having no effect on registration status. The American Institutes for Research institutional review board approved this analysis.

EMS professionals with a reregistration date of March 31, 2004, were requested to include the questionnaire with their reregistration paperwork. Surveys were separated from reregistration packets at the time of processing. At the end of the 2004 reregistration period, questionnaires were scanned by a Pearson National Computer System optical scanner (Owatonna, MN), and results were transferred to a Microsoft Access (Microsoft Corp., Redmond, WA) database.

### Variable Descriptions

Medical director contact was the outcome variable in this study. Three survey questions were used to categorize medical director contact. EMS professionals were asked to report the last time their medical director personally participated in their continuing education, met with the individual personally to discuss an EMS issue, or was seen at the scene of an EMS call. Individuals were given the option of reporting any of these types of contact on a five-point scale (<1 month ago, 1–6 months ago, 7–12 months ago, >1 year ago, and never). Individuals were categorized as having limited medical director contact if they had not observed their medical director in any of the above situations for more than six months. All others were categorized as having recent medical director contact.

Independent variables were selected for this analysis based on plausible associations with medical director contact. The independent variables included in this analysis were type of EMS organization, EMS certification level, size of the community, length of EMS service, and compensation status. The type of EMS organization included fire department, private, hospital-based, county/municipal, governmental, volunteer, and military. EMS certification level included the categories of EMT-Basic, EMT-Intermediate, and EMT-Paramedic. Community size was dichotomized to represent individuals working in predominantly rural or urban areas (rural areas <25,000 people, urban areas ≥25,000 people). Length of EMS service was categorized as 0–1, 2–5, 6–10, 11–15, 16–20, and ≥21 years. Individuals reported compensation status as paid–full-time, paid–part-time, partially paid (stipend, compensated volunteer), and unpaid volunteer. Compensation status was dichotomized to represent paid–full-time individuals and all others.

TABLE 1. Outcome and Independent Variables Frequencies and Percentages

| Variable | Number ($N = 22,026$) | Percentage |
|---|---|---|
| Medical director contact | | |
| Recent | 13,756 | 62 |
| Limited | 8,270 | 38 |
| Level | | |
| Basic | 10,420 | 47 |
| Intermediate | 1,959 | 9 |
| Paramedic | 9,647 | 44 |
| Service type | | |
| County/municipal | 2,361 | 11 |
| Fire department | 7,204 | 33 |
| Government (nonmilitary) | 669 | 3 |
| Hospital-based | 3,587 | 12 |
| Military | 1,724 | 8 |
| Private | 3,857 | 17 |
| Volunteer | 3,587 | 16 |
| Community size | | |
| Rural | 9,397 | 43 |
| Urban | 12,629 | 57 |
| Amount of experience | | |
| 0–1 year | 285 | 1 |
| 2–5 years | 6,901 | 31 |
| 6–10 years | 5,851 | 27 |
| 11–15 years | 4,302 | 20 |
| 16–20 years | 2,403 | 11 |
| ≥ 21years | 2,284 | 10 |
| Compensation status | | |
| Paid–full-time | 13,736 | 62 |
| Paid–part-time | 2,774 | 13 |
| Partially paid | 2,553 | 12 |
| Unpaid volunteer | 2,963 | 13 |

## Data Analysis

A case–control analysis was performed whereby cases were defined as individuals who reported limited medical director contact and controls were defined as those who reported recent medical director contact. Individuals with missing data were removed from the analytic file. A descriptive analysis of the independent variables was performed to better describe the study population. Next, the prevalence of recent medical director contact was estimated in the overall sample. Chi-square analysis was used to determine significant associations with recent medical director contact and the independent variables listed above. Recent medical director contact was further described by level of certification (EMT-Basic or EMT-Paramedic) and compensation status. Finally, unadjusted odds ratios (ORs) were calculated using logistic regression for each independent variable to better asses its measure of effect on the outcome. Data were analyzed using STATA version 9 (StataCorp LP, College Station, TX).

## RESULTS

Of the 45,173 nationally registered EMS professionals who completed reregistration documentation in 2004, 28,647 (63%) returned surveys. Because of missing data, a complete case analysis was performed, leaving 22,026 (49%) individuals who completed the entire survey. There were 8,270 (37.5%) individuals who reported limited medical director contact within the preceding six months.

Table 1 contains the frequency and percentage of all variables analyzed for the entire study population. This study population contained nearly equal numbers of EMT-Basics (47.3%) and EMT-Paramedics (43.8%). A clear majority of participants were compensated as paid–full-time (62.4%) and worked in urban areas (57.3%). Participants represented a range of experience, with more participants reporting two to ten years of experience.

In order to further describe the study population, the relationship between service type and compensation status is elucidated in Tables 2 and 3. Table 2 displays this relationship among individuals reporting their certification level as EMT-Basic or EMT-Paramedic, while Table 3 presents this relationship by community size (rural or urban). The largest percentage of individuals categorized as paid–full-time worked for fire departments. Those working for private EMS organizations were more likely to report paid–part-time status than any other service type. Finally, individuals indicating that they worked for volunteer systems were more likely than any other service type to report being partially paid or an unpaid volunteer. These relationships appeared to remain consistent regardless of certification level or community size.

Medical director contact was found to be significantly associated with certification level and service type. A stepwise increase in the percentage of those reporting

TABLE 2. Frequencies (Percentages) of Reported Compensation Status by Certification Level and Service Type

| | EMT-Basic | | | | EMT-Paramedic | | | |
|---|---|---|---|---|---|---|---|---|
| Service Type | Paid–Full-Time | Paid–Part-Time | Partially Paid | Unpaid Volunteer | Paid–Full-Time | Paid—Part-Time | Partially Paid | Unpaid Volunteer |
| Fire department | 2,054 (43) | 185 (13) | 440 (23) | 354 (16) | 3,199 (40) | 126 (12) | 48 (20) | 65 (15) |
| Hospital-based | 353 (7) | 184 (13) | 118 (6) | 45 (2) | 1,334 (17) | 337 (32) | 26 (11) | 12 (3) |
| County/municipal | 266 (6) | 146 (10) | 190 (10) | 27 (2) | 1,248 (16) | 175 (17) | 41 (17) | 16 (4) |
| Government (nonmilitary) | 336 (7) | 48 (3) | 24 (1) | 40 (2) | 163 (2) | 7 (1) | 6 (3) | 4 (1) |
| Volunteer | 35 (1) | 55 (4) | 1,011 (52) | 1,611 (71) | 31 (0) | 13 (1) | 96 (41) | 330 (75) |
| Private | 770 (16) | 369 (26) | 88 (5) | 76 (3) | 1,854 (23) | 386 (36) | 19 (8) | 7 (2) |
| Military | 950 (20) | 455 (32) | 65 (3) | 105 (5) | 84 (1) | 16 (2) | 0 (0) | 4 (1) |

TABLE 3. Frequencies (Percentages) of Reported Compensation Status by Community Size and Service Type

| Service Type | Rural | | | | Urban | | | |
|---|---|---|---|---|---|---|---|---|
| | Paid–Full-Time | Paid–Part-Time | Partially Paid | Unpaid Volunteer | Paid–Full-Time | Paid–Part-Time | Partially Paid | Unpaid Volunteer |
| Fire department | 1,452 (37) | 234 (20) | 436 (20) | 349 (16) | 4,360 (44) | 129 (8) | 134 (35) | 110 (13) |
| Hospital-based | 475 (12) | 218 (18) | 147 (7) | 35 (2) | 1,325 (14) | 368 (23) | 23 (6) | 33 (4) |
| County/municipal | 499 (13) | 202 (17) | 256 (12) | 45 (2) | 1138 (12) | 168 (11) | 24 (6) | 29 (4) |
| Government (nonmilitary) | 307 (8) | 33 (3) | 14 (1) | 17 (1) | 225 (2) | 24 (2) | 19 (5) | 30 (4) |
| Volunteer | 51 (1) | 70 (6) | 1,220 (56) | 1,590 (75) | 25 (0) | 10 (1) | 95 (25) | 526 (63) |
| Private | 706 (18) | 292 (24) | 81 (4) | 53 (3) | 2,108 (21) | 544 (35) | 38 (10) | 35 (4) |
| Military | 406 (10) | 150 (13) | 18 (1) | 41 (2) | 659 (7) | 332 (21) | 48 (13) | 70 (8) |

recent medical director contact was present when comparing providers' certification levels (EMT-Basic 47.6%, EMT-Intermediate 62.3%, and EMT-Paramedic 78.5%, $p < 0.001$). The highest percentage of recent medical director contact was reported by those who worked for a hospital-based service, while the lowest percentage was reported by volunteer services (hospital-based 78.8%, county/municipal 70.8%, private 67.6%, military 62.4%, government 61.1%, fire-based 57.0%, and volunteer 50.8%, $p < 0.001$).

The prevalence of limited medical oversight appeared to be significantly associated with an individual's certification level. In order to more accurately describe medical director contact, participants' responses were analyzed by certification level (Table 4). Limited medical oversight was higher among EMT-Basics in all of the independent variable categories. Limited medical director contact was lowest for EMT-Basics working in hospital-based or military services at 37.7% and 39.9%, respectively. In all other categories, at least 45% of EMT-Basics reported limited medical director contact.

A similar pattern existed among paramedics, with those working in hospital-based or military services (11.5% and 13.6%) and those with 16 to 20 or more than 21 years of experience (17.3% and 15.8%) reporting the lowest prevalence of limited medical oversight. Chi-square analysis indicated that service type, number of years of experience, and compensation status were significantly related to medical director contact for both EMT-Basics and EMT-Paramedics, whereas community size was significant only among EMT-Basics.

To further describe the complex interplay between compensation status, service type, and medical director contact, additional descriptive statistics are provided in Table 5. This table displays the amount of medical director contact individuals received by compensation status and service type. Again, limited medical director contact was reported most often among those individuals with a compensation status other than full-time.

Table 6 presents the unadjusted OR for each independent variable compared with the outcome, medical director contact. EMT-Paramedics were four times more likely to report recent medical director contact than EMT-Basics (OR 4.02; 95% confidence interval [CI] 3.78–4.28). Individuals working for county/municipal and hospital-based services were nearly two and three times, respectively, more likely to report recent medical director contact (OR 1.83; 95% CI 1.66–2.02; and OR

TABLE 4. Frequencies (Percentages) of Limited Medical Director Contact

| Variable | EMT-Paramedic 2,072/9,647 (21) | EMT-Basic 5,459/10,420 (52) |
|---|---|---|
| Service* | | |
| County/municipal | 314 (21) | 297 (46) |
| Fire department | 829 (24) | 1,954 (64) |
| Government (nonmilitary) | 30 (17) | 216 (48) |
| Hospital-based | 232 (14) | 264 (38) |
| Military | 12 (11) | 628 (40) |
| Private | 490 (22) | 654 (50) |
| Volunteer | 165 (35) | 1,446 (53) |
| Community size† | | |
| Rural | 543 (21) | 2,937 (51) |
| Urban | 1,529 (21) | 2,522 (54) |
| Amount of experience* | | |
| 0–1 year | 5 (33) | 142 (56) |
| 2–5 years | 367 (28) | 2,676 (54) |
| 6–10 years | 713 (25) | 1,281 (53) |
| 11–15 years | 518 (20) | 666 (50) |
| 16–20 years | 252 (17) | 357 (47) |
| ≥21 years | 217 (16) | 337 (47) |
| Compensation status* | | |
| Paid–full-time | 1,567 (20) | 2,512 (53) |
| Paid–part-time | 288 (27) | 684 (47) |
| Partially paid | 51 (22) | 949 (49) |
| Unpaid volunteer | 166 (38) | 1,314 (58) |

*$p < -0.001$ among both EMT-Basics and EMT-Paramedics.
†$p < 0.001$ among EMT-Basics only.
EMT = emergency medical technician.

TABLE 5. Frequencies (Percentages) of Reported Medical Director Contact by Compensation Status and Service Type

| Service Type | Full-Time | | Other | |
|---|---|---|---|---|
| | Limited | Recent | Limited | Recent |
| Fire department | 2,404 (41) | 3,408 (59) | 696 (50) | 696 (50) |
| Hospital-based | 314 (17) | 1,486 (83) | 243 (30) | 581 (71) |
| County/municipal | 417 (26) | 1,220 (74) | 273 (38) | 451 (62) |
| Government (nonmilitary) | 193 (36) | 339 (64) | 67 (49) | 70 (51) |
| Volunteer | 20 (26) | 56 (74) | 1,745 (50) | 1,766 (50) |
| Private | 786 (28) | 2,028 (72) | 463 (44) | 580 (56) |
| Military | 369 (35) | 696 (65) | 280 (43) | 379 (58) |

TABLE 6. Frequency (Percentage) Distribution of Controls and Cases, Unadjusted Odds Ratios, and 95% Confidence Intervals

| Variable | Controls | Cases | Univariate OR | 95% CI |
|---|---|---|---|---|
| Level | | | | |
| Basic | 4,961 (48) | 5,459 (52) | *Referent* | — |
| Intermediate | 1,220 (62) | 739 (38) | 1.8 | 1.65–2.01 |
| Paramedic | 7,575 (78) | 2,072 (22) | 4.0 | 3.78–4.28 |
| Service type | | | | |
| Fire department | 4,104 (57) | 3,100 (43) | *Referent* | — |
| Hospital-based | 2,067 (79) | 557 (21) | 2.8 | 2.53–3.11 |
| County/municipal | 1,671 (71) | 690 (29) | 1.8 | 1.66–2.02 |
| Government (nonmilitary) | 409 (61) | 260 (39) | 1.2 | 1.01–1.40 |
| Volunteer | 1,822 (51) | 1,765 (49) | 0.8 | 0.72–0.85 |
| Private | 2,608 (68) | 1,249 (32) | 1.6 | 1.45–1.71 |
| Military | 1,075 (62) | 649 (38) | 1.3 | 1.12–1.39 |
| Community size | | | | |
| Rural | 5,561 (59) | 3,836 (41) | *Referent* | — |
| Urban | 8,195 (65) | 4,434 (35) | 1.3 | 1.21–1.35 |
| Amount of experience | | | | |
| 0–1 year | 132 (46) | 153 (54) | *Referent* | — |
| 2–5 years | 3,581 (52) | 3,320 (48) | 1.3 | 0.99–1.59 |
| 6–10 years | 3,617 (62) | 2,234 (38) | 1.9 | 1.48–2.38 |
| 11–15 years | 3,020 (70) | 1,282 (30) | 2.7 | 2.14–3.48 |
| 16–20 years | 1,733 (72) | 670 (28) | 3.0 | 2.34–3.85 |
| ≥ 21years | 1,673 (73) | 611 (27) | 3.2 | 2.47–4.08 |
| Compensation status | | | | |
| Paid–full-time | 9,233 (67) | 4,503 (33) | *Referent* | — |
| Paid–part-time | 1,707 (62) | 1,067 (38) | 0.8 | 0.72–0.85 |
| Partially paid | 1,418 (55) | 1,135 (45) | 0.6 | 0.56–0.66 |
| Unpaid volunteer | 1,398 (47) | 1,565 (53) | 0.4 | 0.40–0.47 |

CI = confidence interval; OR = odds ratio.

2.80; 95% CI 2.53–3.11). Finally, unpaid volunteers were 0.44 [95% CI 0.40–0.47] times less likely to report recent medical director contact than those reporting paid–full-time compensation status.

## DISCUSSION

Physician leadership has been instrumental in the development of the modern EMS systems in the United States. Active physician involvement in all aspects of EMS is important for ensuring quality prehospital care. However, the results of this study suggest that substantial percentages of nationally registered EMS professionals lack recent direct contact with their medical director.

There are nearly 600,000 EMT-Basics in the United States, representing the largest proportion of EMS professionals in the country.[11] It is interesting to note that more than half of the EMT-Basics in this study reported limited contact with their medical director. While not part of the primary analysis, 11% of EMT-Basics reported that they did not know the name of their medical director. EMT-Basics provide prehospital care to myriad complex and critical patients based on comparatively little education. The current NSC specifies a minimum of 110 hours of education. EMT-Basics stand to benefit significantly from physician interaction, which should result in improved patient care.

The amount of medical director contact is also associated with compensation status. More that one-half of EMT-Basics and one-third of paramedics characterized as unpaid volunteers reported limited medical director contact. While notable exceptions exist, it is likely that these practitioners see a smaller volume of patients and generally have comparatively less experience with critical patients. The quality of prehospital care can affect the morbidity and mortality of these patients. The frequency of medical director contact should not vary based on an EMS professional's compensation status.

This analysis has also shown that medical director contact varies among service types. Fire department and volunteer-based EMS services had the lowest amount of recent medical director contact among both EMT-Basics and EMT-Paramedics. Also, medical director contact appears to increase with an EMS professional's number of years of experience.

More than ten years ago, the NAEMSP released a position paper on physician medical oversight in EMS. This paper addressed many of the characteristics needed for quality medical oversight, a number of which involve direct contact with field personnel.[4] Our study suggests that many of the elements of medical oversight are not being fulfilled and calls into question the degree to which other aspects of medical oversight are being addressed. Overall, the contact that EMS professionals are having with their medical directors appears to be low. In particular, some groups of EMS professionals who may benefit most from quality medical oversight may be receiving it the least.

## LIMITATIONS AND FUTURE STUDIES

This study has several limitations relating to the study design and the outcome variable. The variables analyzed in this study were self-reported on a questionnaire. Variables analyzed were limited to those included on the questionnaire, and no other information relating to individuals' work life or demographics was available. Therefore, this study contains all of the limitations inherent in a retrospective analysis including the potential for misclassification of cases and controls.

Misclassification can result in information bias when variables are measured with error, an occurrence that is more probable with self-reported data. This study is likely to have suffered from nondifferential misclassification, resulting in underestimates of the calculated measures of effect; however, there is no indication that differential misclassification occurred. This study also used a nonrandom sample of nationally registered EMTs, with more than 28,000 individuals

returning a survey. However, only 77% of eligible participants completed the entire questionnaire. It was assumed that individuals who were excluded because of missing data were missing data at random, and a complete case analysis of the data was performed.[12] These results may not be generalizable to all EMS professionals but, because of the large number of participants, should accurately represent nationally registered EMS professionals.

Another limitation of this study includes the use of an outcome variable that was constructed using three survey questions. While this outcome variable was perceived to have adequate face validity, its construct validity was not assessed. This outcome provided an estimate of medical director contact among nationally registered EMS professionals. The outcome variable did not represent the quality of medical oversight received. This study used quantity of medical oversight as a proxy for quality.

There are other manners in which medical director contact may occur, which could not be assessed in this study. The independent variables studied may be surrogate markers for the relationship between an EMS medical director and the EMS agency. This relationship may be a better indicator of medical director involvement, EMS provider contact, and visibility. Further study should include variables such as medical directors' integration into the command structure, the percentage of time medical directors commit to the agency, and level of compensation to describe the quality of medical oversight.

## CONCLUSION

This study looked at one aspect of quality medical oversight: EMS professionals' contact with their medical director. Results indicate that a high proportion of nationally registered EMT-Basics and EMT-Paramedics reported limited medical director contact. EMT-Basics, volunteers, and those working in fire-based systems were more likely to have had limited medical director contact. While medical director contact is only one aspect of quality medical oversight, it is essential and requires commitment from the entire EMS community.

## References

1. National Highway Traffic Safety Administration (ed). EMS Agenda for the Future. Washington, DC: Department of Transportation, 1996.
2. Kuehl AE (ed). Prehospital Systems and Medical Oversight. 3rd ed. Dubuque, IA: Kendall/Hunt, 2002.
3. Medical control of prehospital emergency medical services [American College of Emergency Physicians position paper]. Ann Emerg Med. 1982;11:387.
4. Alonso-Serra H, Blanton D, O'Connor RE. Physician medical direction in EMS [National Association of EMS Physicians position paper]. Prehosp Emerg Care. 1998;2:153–7.
5. Holroyd BR, Knopp R, Kallsen G. Medical control. Quality assurance in prehospital care. JAMA. 1986;256:1027–31.
6. Pozen MW, D'Agostino RB, Sytkowski PA, et al. Effectiveness of a prehospital medical control system: an analysis of the interaction between emergency room physician and paramedic. Circulation. 1981;63:442–7.
7. Stewart RD. Medical direction in emergency medical services: the role of the physician. Emerg Med Clin North Am. 1987;5:119–32.
8. Tortella BJ, Lavery RF, Cody RP, et al. Physician medical direction and advanced life support in the United States. Acad Emerg Med. 1995;2:274–9.
9. Stone RM, Seaman KG, Bissell RA. A statewide study of EMS oversight: medical director characteristics and involvement compared with national guidelines. Prehosp Emerg Care. 2000;4:345–51.
10. Busko J, Margolis GS, Politis J. Professional medical direction. It's not too much to ask. JEMS. 2006;31(3):92–9.
11. Lindstrom A. JEMS 2006 Platinum Resource Guide: Key Statistics and Contact Information. JEMS. 2006;31(1):42–56.
12. Groves GF, Fowler FJ, Couper MP, Lepkowski JM, Singer E, Tourangeau R. Survey Methodology. Hoboken, NJ: John Wiley and Sons, 2004.